

# Local Market Power In ERCOT

Market Oversight Division  
Public Utility Commission of Texas

Federal Energy Regulatory Commission  
Workshop on Reliability Must Run  
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# The ERCOT Market

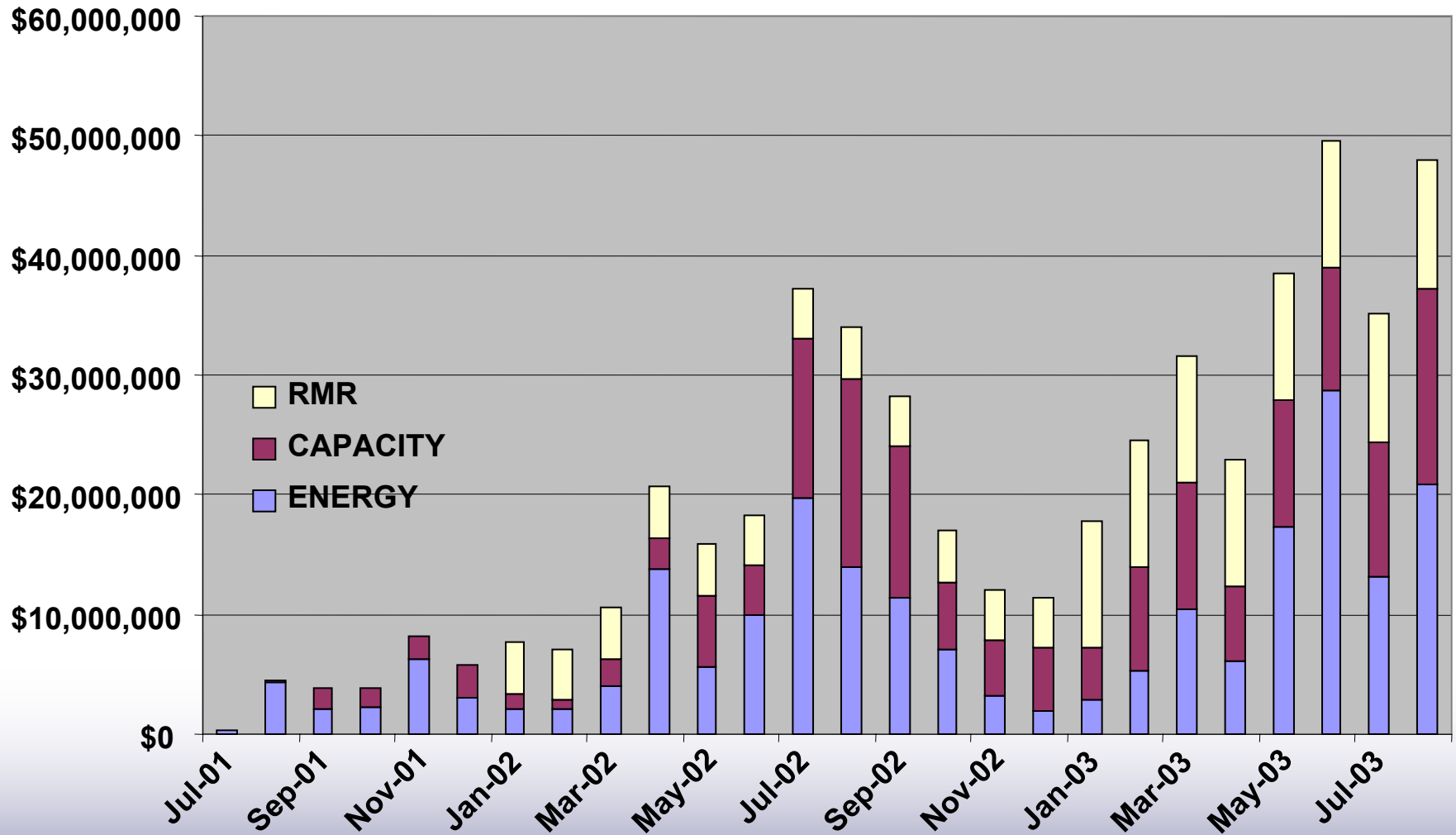
- ERCOT's market design is based on a zonal system. There are 5 zones and 5 commercially significant constraints.
- Interzonal congestion is solved through redispatch and the use of zonal balancing energy. Costs are directly assigned.
- Interzonal congestion costs are hedged through TCRs auctioned by ERCOT.
- Intrazonal congestion is solved through redispatched. Costs are uplifted to loads.

# Local Congestion Costs in ERCOT

- Between July 31, 2001, when the wholesale market opened, and June 2003, local congestion costs amounted to \$ 515 millions that were uplifted to loads.
- Of these, \$60.5 millions were for up balancing energy, and \$50 millions were for down balancing energy to solve local congestion where a competitive constraint existed.
- In June 2003, total Balancing Energy costs for solving local congestion was \$58.8 millions, more than half the total amount since the market opened.

# \$515 Million Local Congestion Costs

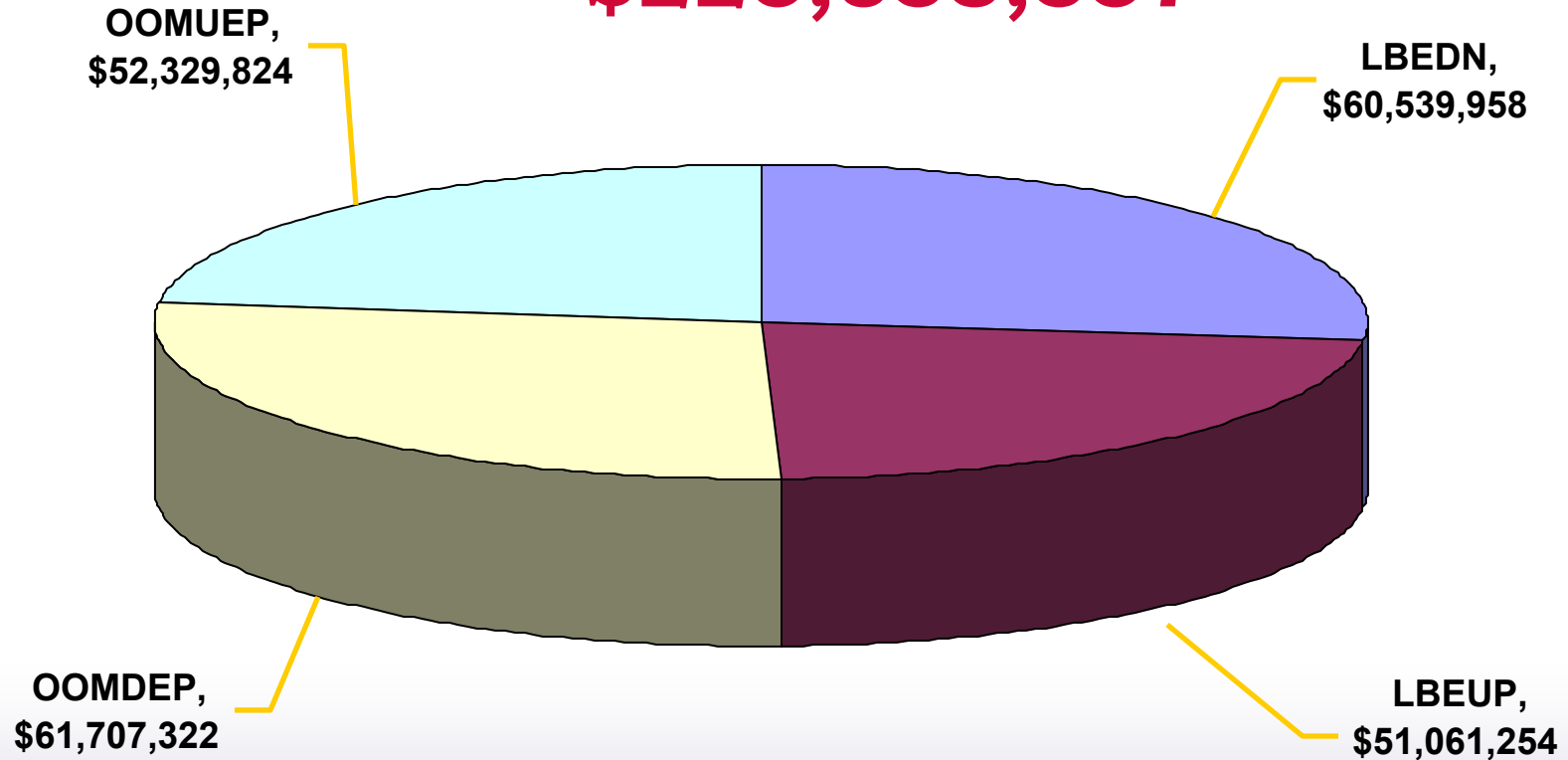
July 31, 2001 to August 31, 2003



# Local Congestion Uplift (Energy only)

July 2001 THRU June 2003

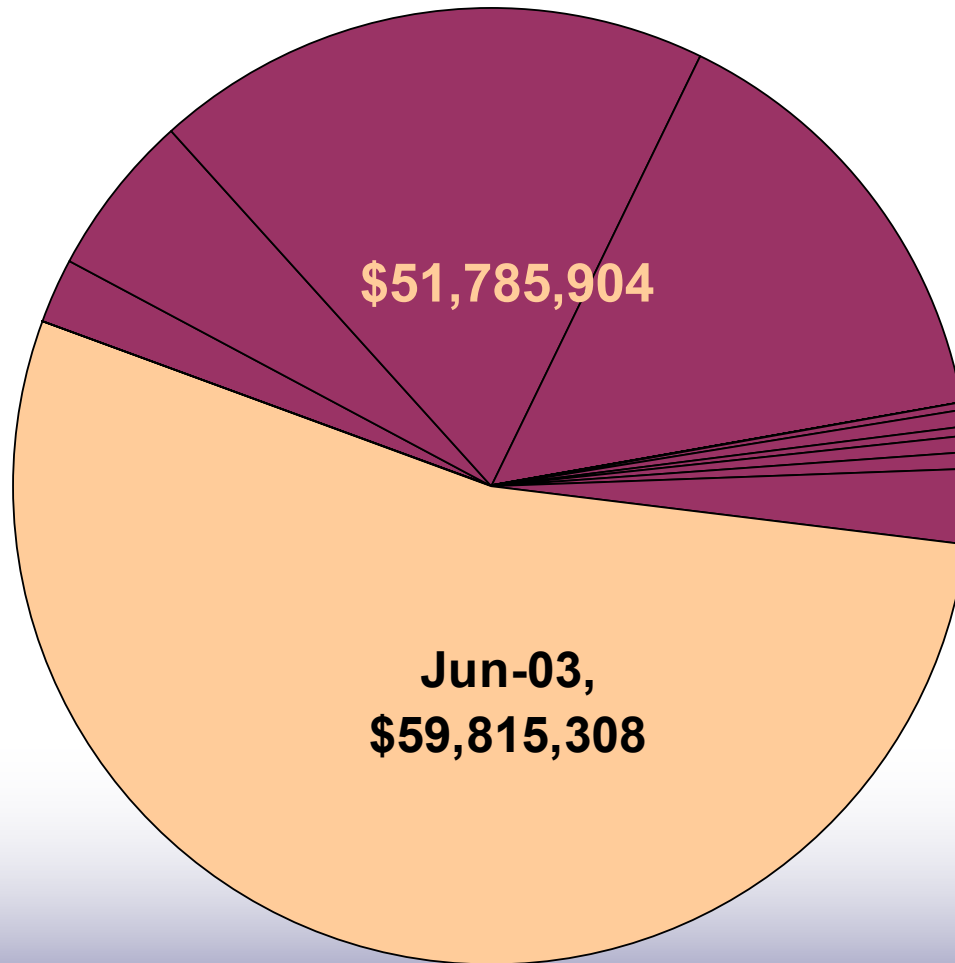
**\$225,638,357**



# **Total Monthly Costs**

## **Local Up and Down Balancing Energy**

**July 2001 thru June 2003**



# Method for Solving Local Congestion

- Bidders submit a resource specific premium bid
- If a market solution does not exist, ERCOT deploys energy from needed Resources out of merit
- Selection of the unit to be deployed is based on the unit's shift factor times the premium bid
- Absent a market solution, compensation for out of merit deployment is based on generic cost plus a percentage

# Market Solution Definition

- A market solution exists if at least 3 unaffiliated Resources, with capacity available, submit bids to ERCOT that can solve a circumstance of local congestion, and no one bidder is essential to solving the congestion
- If a market solution exists to solve local congestion, the resource selected is paid according to its bid premium

# Resources that do not want to be deployed

- Certain resources cannot move easily and do not want to be deployed:
  - Many combined cycle units
  - Co-Generation
  - Baseload units (coal, nuclear)
- Resources were instructed to bid close to the bid cap of  $\pm \$1000$  to indicate that they do not want to be deployed, except as last resort

# Ineffectiveness of this approach

- Bidders may not know when there is going to be a market solution
- No incentive to bid competitively
- Most bidders bid at cap level to indicate no deployment because of faulty deployment mechanism
- Treatment of no-bid units is faulty (no-bid units are considered to determine whether there is a market solution)
- Market solution exists in less than 5% of the cases

# Ineffectiveness of Approach

- No disincentive exists to discourage generators from building in a generator's pocket, and no incentives to build where generation is needed
- In June 2003, a market solution was created when a new generator came on line in a constrained area (in a generator's pocket), resulting in high costs to market

# Local Balancing Energy Cost

## June 2003

- June 10: Market solution exists to resolve congestion on F-R line in Northeast Texas
- June 27: First time market is aware that there is a market solution
- July 1: Last day of market solution
- July 9: ERCOT informs MOD of complaints from high uplift charges
- August 1: Market Solution suspended

# June 10

- A new CCCT enters into commercial operations, causing market solution
- Most bidders didn't know that there was a market solution, (or pretended they did not know,) and continued to bid \$1000, some to avoid decremental instruction
- Mechanism failed because bidders did not bid competitively even though there was a market solution

# June 27

- First bill that indicates to bidders that there was a market solution starting on June 10
- First time market sees this cost in uplift charges
- Bidders continue to bid \$1000, as if there was no market solution

# July 1

- One market entity who is a supplier with units on both sides of the constraint *and* a load serving entity realizes it is getting hurt because its share of the uplift is larger than its revenue from its high bid to resolve the congestion
- The congestion stops on July 2

# July 16

- ERCOT stakeholder committee votes to suspend Market Solution
- ERCOT Staff and stakeholders form a task force to explore alternative payment options
- Another task force is looking into possible infrastructure improvements to relieve the severe congestion in the area

# Issues

- New solution should:
  1. Provide incentive to bid competitively where market solution exists
  2. Attract investments where new generation is needed
  3. compensation should be adequate but not so attractive as to create inefficiencies
  4. Assure efficient deployment
  5. Recognize resources that cannot move easily:  
Nuclear, Hydro, Co-Gen, Wind, etc...
  6. have moderate price impact

# Proposal #1: Predetermine Competition

- Pre-determination of competitive constraints
  - ERCOT would notify market when competitive constraint is expected based on history and existing conditions
  - ERCOT would analyze situation after the fact to determine whether to pay based on bid if market solution existed, or on resource category generic prices.
- Problem: pre-determination not really feasible, plus no assurance that it will change bidding behavior

# Proposal #2: Restrict Bidding Range

- Provide flexible bid limits for each resource category for OOME up and OOME down
- Bid limits should be high enough to allow Resources to bid under limit if market is competitive, but linked to generic costs
- Bid limits should not be so attractive that Resources would want to be OOMed rather than play the market
- Allow adjustments to bid limits as actual implementation is observed

# Considerations for Bid Limits

- Proposal to have bid limits by resource category – was retained
- Proposal to set the bid limits equal to the generic costs where no market solution exists, and allow for the limits to increase when it is known that a market solution exists – was retained
- Proposal to base unit dispatch on shift factor time generic cost – implies that compensation will be also based on generic costs

# Considerations for Bid Limits

- Paying Resources on basis of generic costs by resource category plus percentage may not send the proper signal: inefficient resources receive higher benefit (violates issue #4)
- Paying Resources on generic costs by category may not provide adequate compensation
- Proposal to pay all Resources based on the generic cost of the most inefficient unit
  - PUC Staff thought this proposal would provide incentive to attract new investments where needed (issue #2)
  - Stakeholders rejected the proposal (Violates issue #6, did not believe it would attract investments where needed)

# “Modified” Generic Cost Method to equalize net compensation

- Option #1: inefficient units would be paid a smaller percentage above cost so that they would receive the same net benefit (generic cost – total compensation) as efficient units (issue #4: assures efficient deployment)
- Proposal was not retained

# “Modified” Generic Cost Method to equalize net compensation

- Option #2: Generic cost + a set heat rate adder – was retained
- No agreement was reached on the heat rate adder

# Treatment of Non-bid Units

- Non bid units are resources that cannot move easily: nuclear, hydro, renewable, Load acting as resource
- For deployment purposes, the bid limit was set close to \$1000
- For settlement purposes, Resource Category Generic Fuel cost will be used

# New Solution

- A market solution exists when ERCOT notifies the market that *at least three unaffiliated Resources*, with capacity available, *could* submit bids to ERCOT that can resolve a circumstance of local congestion, and no one bidder is essential to solving the congestion

# New Solution

- ERCOT will publish:
  - Resource Generic Category Fuel prices
  - Resource Generic Category allowable bid ranges
  - Current list of local constraints deemed to be competitive and list of competitive units associated with each constraint
- Criteria for listing: competitive constraints that have occurred more than 2 times in a 30 day period

# New Solution for Competitive Constraint

For units that are listed as possible solutions for a local competitive constraint:

- Deployment and settlement will be based on Resource Specific “permissible” bid and actual shift factors
- A “permissible” bid is any bid within the high and low Resource Category Generic Bid limits assigned to each Generation Resource

# New Solution for Non-competitive Constraint

- Deployment will be based on the mitigated Resource Specific Price
- Settlement will be the higher of the zonal MCPE or the Resource Specific Generic cost (according to the “Modified Generic Cost method”)